LIBBY DATA UPDATE
1/30/2008

1.0 BACKGROUND

Current plan for risk assessment for exposure to LA in outdoor soil:

For any specified exposure area:

1. Characterize soil in exposure area by PLM-VE and/or Visible inspection
2. Use empiric ABS data to estimate C(air) for that soil category and any one or combination of soil disturbance activities
3. Compute cancer and non-cancer risk using one or more alternative risk models, taking scenario-specific exposure time, frequency and duration into account

2.0 WHAT'S THE PROBLEM?

S-QAPP data for outdoor ABS showed trend (see Fig 1)
These data were judged to be too limited, so more ABS data were collected. New data support trend, but have much higher ABS values for clean soil and Bin A soil than before (see Fig 2).

QUESTIONS:

- Why are ABS air values so high for clean fill and Bin A soil?
- What is the source of the fibers seen?
- What are the current estimates of risk for clean soil and Bin A soil?

3.0 NEW INFORMATION

[Note-some of the following has not been validated and is subject to correction. Also, some data continue to come in. Thus, all information is "As of now" and may change]

3.1 Why are ABS air values so high for clean fill and Bin A soil?

a) Stratification of Bin A according to Vis score yields dramatic results (see Fig 3). Bin A V- is pretty much the same as clean fill, and Bin A V+ seems to be clearly higher.

b) Not all clean fills are equal (see Fig 4). ABS air data for 5/6 ABS measurements using clean fill from Eureka suggest levels are much lower than for clean fill from Libby. There is one exception that may or may not have an explanation as an unreliable data point.

c) Detailed review of the data indicate some of the high values for clean fill and Bin A V- soils may be misleading because the soil categorization may be incorrect and/or there might be other sources contributing (see Fig 5, Table 1). There are a few that might be

biased low, too. If any of these high data points are ranked as unreliable or unrepresentative, concentration values might come down some for these bins.

3.2 What is the nature of the fibers seen in clean fill?

Data on the fraction of total LA fibers that are NaK in various media are summarized in Table 2. As seen:

- fibers from the mine area are highly enriched in NaK
- fibers in air and soil in Libby are mainly NaK, but there are some non-NaK present. The fraction that is NaK increases when contamination levels increase
- data from other locations (Eureka, Helena) are limited, but suggest that most fibers ranked as LA are not NaK.

4.0 ESTIMATED RISK LEVELS

Risks were calculated based on the following assumptions

ET = 2 hrs/day
EF = 20 days/yr
Age at start = 0
Age at end = 30

Risk based fractions are based on the most current EX ABS data.
Results are shown in Table 3. Note that RBF(PCME) and the RBF(Berman-Crump) both seem somewhat lower based on new ABS data that based on previous data.

Risk results based on these exposure assumptions and RBFs are presented in Table 4.

4.0 CONCLUSIONS

- "Background" soils in Libby (clean fill from Libby, Bin A Vis-) contain LA fibers, mainly NaK (70-80%), and ABS at these locations does release LA to air. Clean fill from Eureka seems to have lower levels, but data are too limited (and internally inconsistent) to make strong statements.

- When levels of LA in soil become detectable by PLM-VE and/or by visible vermiculite inspection, concentrations in ABS air increase. .

- Dose-response (ABS air vs soil level) is not ideal. Why is Bin A Vis + higher than Bin B1?